

**Notice of Allowability**

Application No.

10/032,949

Examiner

MIDYS ROJAS

Applicant(s)

MUKAIDA ET AL.

Art Unit

2185

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the appeal filed on 4/2/2009.
2. ☒ The allowed claim(s) is/are 21-23.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 7/1/2009.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

/Tuan V. Thai/  
Primary Examiner, Art Unit 2185

**DETAILED ACTION**

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Matthew Binkowski (Reg. No. 58,530) on 7/1/2009.

The application has been amended as follows:

21. A memory controller for accessing a flash memory having a plurality of physical blocks each including a plurality of pages and in which stored data is erased in a unit of the physical block, based on a host address which is in a unit of a sector, supplied from a host computer, comprising:

search means for searching a start page in the physical block corresponding to the host address supplied from the host computer;

determining means for determining whether a first page of a page or pages corresponding to the host address supplied from the host computer is either one of the searched start page and a page located after the searched start page, or not;

write means for writing data supplied from the host computer into the page or pages corresponding to the host address supplied from the host computer when the determining means determines that the first page of a page or pages corresponding to

the host address supplied from the host computer is the searched start page or the page located after the searched start page; and

start page information write means which writes start page information into a redundant area of the start page which is searched by the search means, the start page information representing a page which is next to a last page of the page or pages into which data will be written by the write means and become a new start page after the data is written by the writing means; wherein

the start page being a page next to the last page of a page or pages into which the data supplied from the host computer is written; and

the search means searching the start page by referring to the start page information written in the redundant area.

23. A memory control method for accessing a flash memory having a plurality of physical blocks each including a plurality of pages and in which stored data is erased in unit of the physical block, based on a host address which is in unit of a sector, supplied from a host computer, comprising:

searching a start page in a physical block corresponding to the host address supplied from the host computer;

determining whether first page or a page or pages corresponding to the host address supplied from the host computer is either one of the searched start page and a page located after the searched start page, or not;

writing data supplied from the host computer into the page or pages corresponding to the host address supplied from the host computer when determining that the page or pages corresponding to the host address supplied from the host computer is the searched start page or the page located after the searched start page; and

writing start page information into a redundant area of the start page when starting writing data supplied from the host computer into the flash memory;

the start page being a page next to a last page or pages into which the data supplied from the host computer is written;

the start page being searched based on the start information by referring to the data written in the redundant area.

2. The following is an examiner's statement of reasons for allowance:

The Prior Art of Record does not teach nor suggest the claimed combination as disclosed in independent claims 21 and 23.

The claimed invention discloses a memory controller for accessing a flash memory having a plurality of physical blocks each including a plurality of pages and in which stored data is erased in a unit of the physical block, based on a host address which is in a unit of a sector, supplied from a host computer, comprising:

searching a start page in the physical block corresponding to the host address supplied from the host computer;

determining whether a first page of a page or pages corresponding to the host address supplied from the host computer is either one of the searched start page and a page located after the searched start page, or not;

writing data supplied from the host computer into the page or pages corresponding to the host address supplied from the host computer when the determining means determines that the first page of a page or pages corresponding to the host address supplied from the host computer is the searched start page or the page located after the searched start page; and

writing start page information into a redundant area of the start page which is searched by the search means, the start page information representing a page which is next to a last page of the page or pages into which data will be written by the write means and become a new start page after the data is written by the writing means; wherein

the start page being a page next to the last page of a page or pages into which the data supplied from the host computer is written; and

searching the start page by referring to the start page information written in the redundant area.

Hiraka (Us 5,987,573) discloses a memory with a control section having a table memory and detecting at least one empty block by searching the table memory for the empty data in a data writing mode (see Col. 2, lines 35-56).

Hiraka does not teach writing start page information into a redundant area of the start page which is searched by the search means, the start page information representing a page which is next to a last page of the page or pages into which data will be written by the write means and become a new start page after the data is written by the writing means; wherein the start page being a page next to the last page of a page or pages into which the data supplied from the host computer is written; and the search means searching the start page by referring to the start page information written in the redundant area.

Applicant's arguments (page 7, par 4 - page 8, par 1) were particularly persuasive since the Prior Art of Record does not teach the limitations in questions in combination with a "start page" as defined by applicant.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MIDYS ROJAS whose telephone number is (571)272-4207. The examiner can normally be reached on M-TH 6:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tuan V. Thai/  
Primary Examiner, Art Unit 2185

/Midys Rojas/  
Examiner, Art Unit 2185

/MR/